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# CAMERA CRAFTSMAN

VOL. 5 No. 2  
MAR-APR 1959



Airborne Optical at Holloman

**In this issue:** New NCRS Graduates

Automatic Focusing System



## Book Shop

Here are useful additions to your library of technical material. This department will regularly offer suggestions for new books you may wish to acquire. Any reference books, whether or not here listed, photographic or otherwise, will be located for you and may be purchased thru NCRS Supply Department.

FLASH: ULTRA HIGH SPEED PHOTOGRAPHY	\$6.50
By H. Edgerton and J. Killian	
PHOTOGRAPHIC OPTICS	5.75
Arthur Cox	
PHOTOGRAPHIC OPTICS	6.00
James K. Greenleaf	
PRINCIPLES OF OPTICS	9.50
Henry and Perlin	
THE CAMERA LENS AND SHUTTER	4.95
W. L. Wakefield	
CAMERA REPAIRMAN'S HANDBOOK	5.95
HOW TO ORGANIZE AND OPERATE PHOTOGRAPHIC SERVICE DEPARTMENTS	.50
PROFESSIONAL EQUIPMENT; USE, MAINTENANCE, AND REPAIR OF	.50
KODAK REFERENCE HANDBOOKS	ea 4.00
MINIATURE AND PRECISION CAMERAS	7.95
S. J. Lipinsky	
DICTIONARY OF PHOTOGRAPHY	10.00
A. L. M. Somerby	
PHOTO DICTIONARY	3.50
Morgan & Morgan	
FOCAL ENCYCLOPEDIA OF PHOTOGRAPHY	20.00
SUCCESSFUL SELLING OF CAMERAS AND ACCESSORIES	
D. Longer	2.95
KODAK GRAPHIC ARTS HANDBOOK	6.50
PHOTO-LAB INDEX	19.95
Henry M. Lester and John S. Carroll	
THEORY OF THE PHOTOGRAPHIC PROCESS	21.50
C. E. K. Mees	

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# CAMERA CRAFTSMAN

VOLUME 5  
NUMBER 2

March - April 1959

Published for students,  
graduates and friends of the  
National Camera Repair School

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### THIS MONTH'S COVER

An Air Force photo showing the recovery of a nose cone containing special camera equipment. See story on Page 4.

### STAFF

Clair H. Schmitt	Editor
Dorothy Hauptman	Assistant Editor
Margaret Snyder	Art Director
Frank H. Curtis	Advertising Manager
Felix R. Morris	Production Manager

## The Director's Viewpoint

By SAMUEL L. LOVE



### SPT, "The Camera Craftsman," and NCRS

We of National Camera Repair School are proud of the sustaining hand that can be offered to the budding new Society of Photo-Technologists. A helpful association for camera repair men has long been needed. When many in the field can cooperate for the good of the profession, the passage of time will quickly demonstrate the value of the Society.

This is Volume 5, Number 2 of the Camera Craftsman. This little magazine has been published for over four years. Although originally a School paper only, the Camera Craftsman has begun to simplify communication between people interested in camera repair everywhere. It has always been your paper. Now a part of it has been taken over and will be used by the Society of Photo-Technologists. Perhaps, in time, as the Society gains strength, responsibility for the complete magazine will be accepted by the Society.

The role of the camera craftsman in the photographic industry is a growing one. Technical advances in photographic equipment determine how skilled a camera technician must be. We must continue to learn. Repairmen must continue to cooperate, not only with the manufacturers of the photographic equipment serviced, but with each other.

There doesn't seem to be a question in any repairman's mind about what is needed. There is a question about how these needs can be accomplished. The National Camera Repair School will strive to do a continually better job of developing new repairmen to fill the needs of the industry. It will always offer a helping hand to a working repairman anxious to establish his skills.

Now the SPT can serve all camera craftsmen through mutual effort. For today's need is lifelong growth and training. Sharing experiences and knowledge will help every skilled camera craftsman be of more service to the photo field.

Have you filed your membership yet? Do it today.

## CIRCUITRACER

*A small dependable rugged tester*



• • •

An easy to use, inexpensive electric circuit tester especially adaptable for camera repair work. It is capable of locating and identifying dead or live circuits of any voltage, fast.

- Checks electric photo-flash circuits
- Analyzes breaks and high resistance joints
- Tests flash wiring for breaks or bad connections

Put this handy unit into your carryout case or pocket for quick tests anywhere. Tested and approved for camera repair by "National ServiShops"

\$4.50

A ServiShops PRODUCT



**3-D  
Binocular  
Magnifier**  
Now available  
for  
Camera Repairs

You will work better when you see better with this new Binocular Magnifier. May be worn with or without eyeglasses. Leaves both hands free to work. Fine tolerance and precision work can be done easier, faster and more accurately using this equipment. With the Magni-Focus you see an object in three dimensions exactly magnified - with depth of clarity. It reduces eye-strain and prevents straining - thus saving time, increasing accuracy and minimizing the chance of errors and accidents. The head-band is adjustable for your comfort. Normal vision may be restored by slightly raising your head.

Model No	2 magnifies 1-1/2 times or 20"	Price
3	1-3/4	14"
7	2-3/4	8"
10	3-1/2	4"
		12.50

No 13 and 17 are the same as No 3 and 7 with an auxiliary lens attachment which gives magnification of 4-1/4 and 5-1/4 respectively, with the right eye only.  
Frigid \$15.00 each.

## A ServiShops PRODUCT

**Use Kimwipes  
on your  
camera  
bench...**

**SAFE!**  
**SOFT!**  
**CLEAN!**  
**DISPOSABLE!**  
**NON ABRASIVE!**

**DISPOSABLE WIPES**

**Kimwipes** special design captures grit and dirt in the crevices to protect such highly polished surfaces as camera lenses and binoculars.

**4 Boxes...\$1.35**  
**Postage paid with  
cash orders.**

**12 Boxes...\$3.45**

3 x 9" Wipes  
240 wipes per  
carton

### AIRBORNE OPTICAL AT HOLLOWMAN AFB

Fifty five miles over Holloman Air Development Center a high speed guided missile was disintegrating instead of smoothly flying to its target on the desert floor far below.

When the film in the special cameras on the ground was developed, the image was so small that the cause for the tumbling was impossible to determine. Also, data from the telemetering equipment was not conclusive.

The solution: On the next flight, call in the Airborne Optical Instrumentation Unit -- the group that designs special cameras and methods for photographing what goes on inside and outside missiles, rockets and balloons that travel far and high.

Although airborne optical instrumentation has been in use on a standardized basis since the beginning of World War II, only recently has it grown into the specialized field it is today.

But when a group of scientists and technicians want to find out what makes a missile tumble or what causes the parachute with recording instruments to malfunction, it involves a lot more than just hanging a camera on and sending them off into the sky.

At one time the Aerobee Rocket was being used to test a device that pointed at the sun at a certain altitude. At the prescribed altitude, two doors were blown off the forward part of the rocket. Inside was a small arm which moved up and down and sideways to track on the sun as the rocket moved and rotated. This operation occurred at an altitude well over 50 miles above the earth. When the Aerobee was recovered after its flight, scientists and technicians discovered that the test did not come off as planned. Several causes for failure were suspected, but no one was sure.

That's when they called in the Air-Borne Optical Instrumentation Unit. Their mission was to design a camera, together with armored housing, to photograph the internal workings of the Aerobee's sun pointer arm.

There were several catches to the problem. The camera had to be no larger than half a carton of cigarettes. Also the camera had to be designed within the shape of a cone, so that it could fit in the extreme forward part of the Aerobee nose. And still another problem was that the camera couldn't weigh more than eight pounds.

Before any planning or actual work could begin, a method of protecting the camera when it hit the ground had to be devised. Magnesium, which is usually used, was chosen for this camera and Aerobee nose cone body.

(con't. page 6)



## Reports FROM THE CRAFTSMEN

Thus far, I have only done retail jobs for neighbors, which consisted of cleaning and replacing broken parts. However, they were very satisfied, thanks to your School. I feel pretty proud since I am a beginner as far as repair is concerned.

Milton Brown  
Los Angeles

I have done over \$250 worth of repairs since I started my lessons.

W. B. Pomeroy  
Traverse City, Michigan

Thank you for being so helpful in enabling me to make the purchase of your (Servishop Motion) Analyzer. There is no need in stating the many ways in which it proves useful to me, you designed it. But I must say it is responsible for enabling me to do twice the amount of work with the many short cuts it provides in finding troubles. In addition, it has proved valuable in tests and precision workmanship. Thank you again for your patience and consideration that enabled me to be the owner of the only piece of precision testing equipment in this locality.

Walter J. Zolna  
Wyomissing, Pa.

I received the Unimat the other day, and I might say it looks like a very nice piece of equipment. I have not had the time to set it up and try it out yet, as our Christmas business keeps us very busy. We just about tripled our business over last year.

A. B. Hood  
Tulare, California

I have only been actually working on camera repairs since about the first or middle of March but since that time I have built my gross up to about \$125 per month (June) and the bulk of that is from one source which is the largest photo shop in town. I have been afraid to really go looking for more business at this time as I am still sort of slow on getting the work out but as I gain speed I will take on more work.

Fred Downey  
Cedar Rapids, Iowa



IN YOUR WORKSHOP: Tap-A-Line permits you to plug in soldering irons, test lamps, flex shaft, other equipment. Has them all ready and available for immediate use.

IN YOUR STUDIO: Tap-A-Line is convenient for portable lights, flood lights, spot lights.  
Model TL

1 foot \$2.50

On Your Test Bench:  
Tap-A-Line will permit you to plug in all types of flash cords and have them at your finger tips.



Protect your customers' camera from heat and shock with this sturdy...

### CAMERA CARRYING CASE



- Made of rugged 3/8" plywood.
- Hardware is heavy duty.
- Heavy luggage-type handle.
- Corners protected with metal.
- Lined throughout with sponge rubber.
- Has 2 turnbuckle catches.
- Inside dimensions - 18-3/4" long, 10-1/2" wide, 8-3/4" deep.
- Finished in beautiful clear lacquer.

F.O.B. Englewood, Colorado **\$9.50**

# draftette®

Complete with 10" x 13" drawing board . . . \$3.95

Draftette instrument only . . . . . \$1.95  
(Scale 3" x 5" - 6" arms - 150 degree  
protractor. Draftette completely assembled -  
ready for use.)

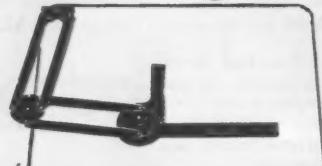
New Draftette with 4" x 6" scale and 11" x 17"  
Drawing board - Complete . . . . . \$8.50

New Draftette 4" x 6" scale alone . . . . . \$2.00

**draftette®**

Complete with 11" x 17"

drawing board only **\$6.50**



## CHECK THESE FEATURES

### 1. QUALITY

Aluminum construction—available in jet black  
—anodized with gleaming, white-filled numbers and letters.

### 2. ECONOMY

Costs much less than other drafting machines  
—you can afford one for home, one for office,  
shop, school or field.

### 3. PRECISION

All parts machine calibrated — scientifically  
engineered to retain its original accuracy.

### 4. RUGGEDNESS

Not a gadget — *draftette* is a sturdy con-  
structed instrument that will withstand hard  
normal use indefinitely.

### 5. COMPACTNESS

*Draftette* (without board) folds like a jack-  
knife . . . slips into drawer, pocket or briefcase.  
*Draftette* instrument complete with *Draftette*  
board also fits into briefcase, ready for use  
anytime, anywhere.

### 6. VERSATILITY

Now you can "do it yourself" — 101 practical  
uses in your work, studies and hobbies (see  
reverse side for just a few).

**A ServiShops PRODUCT**

(Airborne Optics, con't.)

Then Master Sergeant Robert L. Livingston,  
Non-Commissioned Officer in Charge of the Unit,  
a man with more than ten years of guided mis-  
sile experience, and T/Sgt. Jack H. Erbes, who  
has spent twenty years as a precision machinist,  
went to work.

It took a good six months of trial and error,  
design and redesign before the camera was de-  
clared ready for flight, but it was a complete  
success.

Once one of Sgt. Livingston's cameras which  
was attached to a balloon broke loose from its  
connections and free-fell to the earth from an  
altitude of 65,000 feet. The impact pulverized  
everything but the camera and its armor hous-  
ing. It was in perfect shape, ready to go up in  
the air again. Previously the same camera free  
fell from a height of 84 miles in a V-2 rocket,  
without damage.

The next day, a technician was loading film  
into the camera at his bench in the Flight Deter-  
mination Laboratory when his hand slipped and  
the camera in its special housing fell 30 inches  
to the floor.

When the camera was checked, it was dis-  
covered that the front lens element was smashed  
beyond repair. How could this camera fall 84  
miles and not be damaged and then fall 30 inches  
and be smashed? Sergeant Livingston and his  
men would like to know. It was just another  
problem for the Airborne Optical Instrumenta-  
tion Unit to figure out, along with all the others.

### ANNUAL NCRS STOCKHOLDERS MEETING

The Annual Stockholders' Meeting of the Na-  
tional Camera Repair School, Inc., was held at  
the School building, 2000 West Union Avenue,  
Englewood, Colorado.

Progress in camera repair that can be traced  
to School efforts during 1958, were keynotes  
emphasized by the speakers. The acceptance  
and wide activities of various NCRS graduates  
continue to emphasize the value of the School's  
work to the photographic industry.

New products and publications of the School,  
scheduled for announcement early in the new  
year, were described to the stockholders pre-  
sent. Among the materials distributed was the  
report of a recently completed audit with the  
Corporation's balance sheet and income state-  
ment for the past year.

The Board of Directors elected to serve the  
following year are S. L. Love, C. R. Bernard,  
and B. F. Napheys.



## NHSC EXECUTIVE DIRECTOR ASSUMES DUTIES

**MARCH 15TH**

The National Home Study Council has announced the appointment of Dr. Robert Allen to succeed Dr. Homer Kempfer as Executive Director and Secretary of the NHSC Accrediting Commission, with duties beginning March 15.

Dr. Allen has been Educational Director of The Quartermaster School at Fort Lee, Virginia, and Educational Advisor and Consultant to the Commanding General and Assistant Chief of Staff 03, in the Quartermaster Training Command. Up to 20,000 students annually were trained under his supervision, including 5,000 correspondence students.

Formerly a professor at the University of Virginia, and at one time in charge of its correspondence work, Dr. Allen has continued to teach graduate and undergraduate Educational Psychology, Mental Hygiene, and Psychology in Business and Industry for the University Extension.

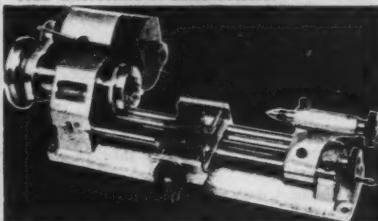
A Lieutenant Commander, active in the Naval Reserve, Dr. Allen is an instructor for the senior class of the Officer School, Richmond, Virginia, undergoing Naval War College level courses. During World War II Dr. Allen served in both the Army and Navy in enlisted status, and received a direct commission as a Naval Officer from the ranks. A combat veteran, he served as Executive Officer of a TP Boat in the Southwest Pacific, New Guinea, Philippines and Borneo.

Dr. Allen has received numerous honors and awards, including the Dupont Senior Research Fellowship at the University of Virginia in 1945; the Secretary of the Army Research and Study Fellowship in Education and Television in the United States and Europe, 1954-58; and the Department of the Army Award for Exceptional Civilian Service.

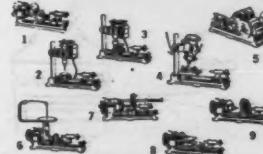
Dr. Allen holds an A.B. degree in biology and chemistry from Johns Hopkins University; an M.A. in social studies from Columbia; and a Ph.D. in education, administration and psychology from the University of Virginia (1946).

## UNIMAT

Unimat is a precision tool designed for technicians and engineers. It's readymade for Camera Craftsmen. No bigger than a typewriter, Unimat is a combination of 10 tools in 1, operating on just one base. Widely acclaimed as the finest tool ever developed for machining small parts made of metal, wood or plastic, Unimat is a rugged, portable machine that will provide a lifetime of satisfaction.



**Basic unit consists of the precision lathe and all components necessary to set up Drill Press, Milling Machine, Tool and Surface Grinding Machine, Hand Drill, Grinding and Polishing Machine. Also includes Motor, upright steel drill press post, universal 3 jaw self centering "Cushman" type lathe chuck (laws reverse), 3 jaw "Jacobs" type 1/4" capacity drill chuck, Pivoting tool post, 2 dead centers. Face plate, Lathe dog, Grindstone arbor, Allen wrench, easy to follow instruction manual. Unimat basic unit comes handsomely packed in sturdy, wood veneer storage chest. Complete basic unit, Price \$99.50**  
**Items 1 through 5 are included in the basic unit. Items 6 through 9 are accessories. Write for illustrated literature and Price list.**



Attachments and accessories that turn Unimat into a complete machine shop: 1. Lathe 2. Drill Press 3. Tool and Surface Grinding Machine 4. Milling Machine 5. Polishing and Grinding Machine 6. Jig Saw 7. Threader 8. Circular Saw 9. Indexer and Divider.

## ServiShop ITEMS



Now packaged in convenient 7 cc applicator guns, NCRS Supply has two of the finest instrument lubricants available. Use All-Temp Lube for sliding levers and similar friction points. Use Moly Lube on motion picture camera springs.

All-Temp Lube \_\_\_\_\_ .60  
Moly Lube \_\_\_\_\_ .70



SHINO Polishing Cloths  
Two cloths - one with jewelers' rouge, the other for final polishing. Comes in cardboard box.  
11-1/2" x 14" size. Each \_\_\_\_\_ .75



Non-corrosive, resistant to temperature change, this Porpoise Jaw oil product stays at the point of lubrication  
3/8 oz. bottle \_\_\_\_\_ .75

### WEST GERMAN CAMERAS GAIN IN DECLINING US IMPORT MARKET

U.S. still-camera imports from West Germany increased slightly in number and substantially in value during the first 9 months of 1958, compared to the same period in 1957, according to the latest U.S. Department of Commerce statistics published in the February 9 issue of Foreign Commerce Weekly, official journal of the Department.

This increase took place in the face of an average total decline of 35.7% in the number of still-camera imports from all sources. Japanese camera shipments to the United States dropped more than 33% in number and almost \$1 million in value during this period, continuing a trend that began in the first quarter of the year.

### SOMEBODY NEEDS THAT DUSTY RANGEFINDER

Do you have a piece of practice equipment around the shop that belongs to your School but on which you haven't yet worked? When you keep loaned equipment longer than you must in order to complete your lesson efficiently, some co-student may be forced to wait for it and be unfairly delayed in completing the same lesson.

If you can't complete a lesson and for some reason are holding practice equipment, just send it back so someone else can use it. When you're ready, a new shutter or other part that you need will be shipped to you.

Complete your lessons on time. You avoid rental charges, take another step toward your future success, and help your fellow student.

### QUIET, PLEASE

Electronic earmuffs which create quiet have been developed by the Department of the Army and RCA. The artificial quiet is produced by adding more noise-- just as loud --but opposite in phase, so that the sound waves cancel each other. While the equipment was designed for the Army, where it is expected to be used in tanks and planes, it will probably find its way into commercial use where riveters and millworkers will benefit. The electronic inverter and amplifier used can be miniaturized to pocket size.

TO MAKE YOUR NEW TELEPHONE NUMBER STICK, try sending stickers to your mailing list. A Vancouver, B.C. company solved the problem of mid-year change in number that way. With a card announcing change, firm enclosed three self-sticking labels giving firm's name, new number and a note: "Please affix on phone book."



## Shop Shots

HERE'S WHERE SERVISHOP CRAFTSMEN LEARN AND EARN  
Made a change in your shop lately? Make a quick picture  
or two and send them in. Share your ideas.



Dean Strempe  
Oelwein, Iowa



Earl Donaldson  
Corpus Christi, Texas



Floyd Mays  
Pontiac, Illinois



Gene Wheeler  
Waterford, Connecticut



Claude Miller  
Gulfport, Mississippi



William Bolton  
Venice, Florida

# SPT

## THE SOCIETY OF PHOTO-TECHNOLOGISTS

The following Press Release has been mailed to newspapers, magazines, and other publications thruout the country for immediate release:



Articles of Incorporation have been filed, establishing the Society of Photo-Technologists. The primary objects of the Society are the advancement and diffusion of knowledge of the technological aspects of photographic equipment. A set of By-Laws have been proposed for approval by the charter membership and an initial program is being developed.

Membership in the SPT is open to camera repairmen and to others whose interests similarly lie in the technology of photographic equipment. Several classes, including student, regular and sustaining memberships are open. A student member is one who is a regular student or in-training in some technical phase of photography or photo-technology. A regular member is one who is actively engaged in a technological aspect of photography. He shall be either one or a combination of the following: A camera repairman, one who has performed or is performing technological work on photographic or related apparatus; A technician who regularly applies photographic principles to a field not normally associated with photography; An administrator or operator of an organization whose major function is concerned with photographic technology. A sustaining member is any person or firm who is engaged in providing services or merchandise for photo technology.

A copy of the proposed By-Laws of the Society will be sent on request to SPT, Englewood, Colorado. Prospective mem-

bers may obtain applications in the same way.

Copies of the proposed By-Laws, along with applications for memberships, have been distributed to repairmen all over the United States.

Although it has been only a short time since the initial mailing was made, applications for membership are arriving every day. Prominent photographic personalities from whom applications have already been received include: Mr. Edward E. Hannigan, Editor of US Camera Magazine; Mr. David B. Eisendrath, Technical Editor and Columnist for Photo Methods for Industry.

Other applications received are from repairmen, repair shop operators, and students throughout the world.

If you did not receive your copy of the By-Laws and application, a card to SPT, Englewood, Colorado, will bring them to you promptly. When you send in your application, remember that the Society also needs to know if you are willing to serve as an officer, committee member, or in any other capacity to help the group effort. No matter where you live, your willingness to work will help tremendously.

Members of certain committees may have to be within the same area, so that meetings could be scheduled easily, but for the most part your geographical location will have no bearing on the office or position that you may hold.

A supply of lapel pins for members of SPT have been manufactured and are now on hand for delivery. These are beautiful sterling silver pins. They show the distinctive SPT initials on a turquoise-blue background. They are available for members only at \$3.00 each. Make your checks payable to SPT.

## Congratulations TO NEW NCRS GRADUATES

Twenty-three states in the US, as well as Europe, Canada and Malaya are represented by 1958's fourth-quarter National Camera Repair School graduates. Forty-five men and a woman received diplomas.

Graduation time represents the culmination of studies completed over a period of from one to three years. Several of the Fall 1958 grads began their training as long ago as August, 1954, although one started in October of 1957. All of these NCRS graduates deserve the highest praise, for the diligent attention and unflagging work that went into their course of training.

Hank Steendam	Ontario, Canada
Chu Siew Kit	Singapore, Malaya
E. H. Hylander	Malaga, Spain
Charley McClure	Arizona
Chester M. Bruszewski	California
S. E. Chubbuck	California
Gene L. Clark	California
Chancey L. Frost	California
S. M. Sevier	California
Burton E. Shoffner	California
George Suyenaga	California
Gordon Bess	Colorado
Fred J. Stickel	Colorado
John P. Reames	Georgia
O. J. Hebrank	Kansas
Okie S. Green	Maine
Mrs. Earla Bisson	Maryland
Homer M. Littleton	Massachusetts
Frank P. Rigney	Michigan
Verne Comp	Michigan
Theodore N. Garrison	Michigan
Walter J. Husband	Michigan
John H. Joyce	Michigan
John H. Millerwise	Michigan
Ralph E. Zamosky	Michigan
Karel Ditmar	New Hampshire
Robert G. Boehme	New Jersey
Arne O. Rovig	New York
Gordon J. Schmahl	New York
Walter W. Timmers	New York
Ralph L. Wright	North Carolina
Harry Leeper	Ohio
Thomas D. Sox	Ohio
Wilfred L. Wiegand	Ohio
Francis E. Zink	Ohio
Vyron E. Hodges	Oregon
Albert C. Chonka	Pennsylvania

(Cont. Page 14)

## ● HELP WANTED ●

A card to NCRS Placement Service will bring more details about these opportunities. Include code number listed for opening that interests you

927 Camera shop owner in Wichita Falls, Texas, needs experienced student or graduate. Salary Open.

929 Photo Lab in Stone Harbor, NJ, would like student for all-around work. Some camera repair, plant equipment maintenance, route work. Small country wholesale, retail and photo-finishing. Comfortable living at low-pressure operation.

8111 Established repairshop in Cincinnati, O. wants student and/or experienced man. Here's an opportunity to grow with expanding shop.

924 Repair shop located in Atlanta, Georgia looking for one or more experienced student or graduate. Work in fully equipped shop on commission basis.

826 Experienced student or graduate needed in rapidly expanding shop in Kenosha, Wisc. Opportunity to advance to management position. Salary Open.

8104 Skilled man needed to repair professional motion picture equipment for large Los Angeles service and supply organization.

8106 Excellent opportunity for experienced man. Business of your own with good equipment, premises, lights, water, etc. at your disposal. Take over servicing of equipment of leading distributor in Memphis, Tenn. at 85% of charges.

858 Top notch man needed by fully equipped repair shop in Portland, Oregon. Also opening for top-flight student.

81118 Trained repairman needed in service department of photo dealer in Providence, R.I. Good position, established company.

8915 Opening for graduate or experienced man with precision instrument manufacturer in New York City area.

9310 First class man needed by established shop in Cleveland, Ohio. Less experienced student or graduate will be considered.

### Dealers --- Repairshops --- Service Departments

When you need repairmen, send details to NCRS Placement Service. Your needs will be listed here. Applications of interested repairmen will be sent for your consideration.

### SPIRAL SPRING BELTING

Furnished in 3 test lengths complete with coupling. Runs smooth and noiseless.

No. 11-130

Each \$8.50



### PLASTIC FUSIBLE BELTING

Ends fuse when heated to form endless belt.



No. 11-174.  $5\frac{1}{2}$ " diam.—Per Ft. \$8.15  
No. 11-175.  $6\frac{1}{2}$ " diam.—Per Ft. .15  
No. 11-176.  $7\frac{1}{2}$ " diam.—Per Ft. .15



### RUST REMOVER

4 oz. bottle \$1.70

H-R Rust Remover is non-acid, absolutely harmless to the polished finish of fine parts. You may leave parts in this rust remover overnight. You may dip parts directly into the wide mouth 4 oz. bottle.



### HARD ARKANSAS MOUNTED STONES

Length	Width	Each
3 $\frac{1}{2}$ "	1"	\$3.00
3 $\frac{1}{2}$ "	1 $\frac{1}{2}$ "	7.50
5"	1 $\frac{1}{2}$ "	8.00
6"	1 $\frac{1}{2}$ "	18.00

HARD PERENNIAL PIECES  
(Approx.  $\frac{1}{2}$  the thickness of regular stones)  
3" 1" 1.50

### SERVISHOPS HEADQUARTERS ARE YOUR SPECIALISTS

ServiShops Headquarters advertising is beginning to appear in National magazines. Rely on your Headquarter Shops to back up your own work. For example, electronic specialists and complete facilities here can take care of your repairs on sound equipment, electronic flash and other specialized photographic machinery.

Send repairs direct to ServiShops Headquarters, Box 174ER, Englewood, Colorado.



hi there!

*Daphne*

I was just in the middle of a Dictaphone belt when Clair came by to tell me to drop everything and get started on my column for the Craftsman. This is just one more of those days when I can't get things started clicking in my little ole feeble mind and so I haven't come up with anything to chat about yet. I'm thinkin tho! (always thinking!) Let's see, now, Jocko hasn't done any thing different lately, I haven't either and if you guys have, you sure are keeping quiet about it.

Oh, just in case some of you don't know it --- this is the year for the Colorado Centennial "Rush to the Rockies". If any of you are planning on dropping in on us for a visit, so we can get a look at you, do it this year --- I'm sure you would enjoy it a lot.

Everybody is growing those crazy looking beards and wearing the "Rush to the Rockies" ties. At least Jocko doesn't have such a complex now, since everybody else is finally coming around and joining in with him. Which reminds me, I wish you could see Joe Barbeau (our Accountant) and Johnny Price in the Supply Department. They each have a mighty fine looking beard now but you should have seen them while they were getting em started. I bet their wives would have sold em both perty cheap. Ha. I'd better change my tone of voice here a little or Joe might accidentally on purpose forget that Friday is my pay day too! Ha!!! Nope, I should never have said that either, he's a good sport and knows I'm only kidding. Don't ya, Joe? I know --- "Just keep walking".

I was wondering if any of you are having trouble with sun spots? It must be the weather! Sure will be happy when summer gets here and it quits snowing. Of course, then there's Lorenzo Hall who lives in Florida, (Hi) and quite a few others too, wish I had more time to tell you about all of them, sitting around in the sunshine smoking their cigars, playing golf, going for a swim, etc., for you characters who live in those year-round tropical places, how's about packing up some of that ole sunshine and 85 degree heat and shipping it out this way.

Congrats to all of you guys who just received your Diplomas lately. Sure am gonna miss ya, so how about writing once in a while (between repair jobs) and let us know what's new. OK? Swell!

## Our Students Speak



I think one of my most valuable pieces of equipment, but not the most costly, is my cleaning machine. I would highly recommend it to anyone wanting to do a thorough job.

Ray Dodge  
Wichita, Kansas

"Be A Diagnostician"-- a very, very good lesson.

John P. Fortune  
Port of Spain, W.I.

I have completed Lessons 1 and 2 and am working on Lesson #3. If the lessons continue with the same quality that is found in Lesson 3, I am sure that the course will be a great asset to me.

John E. Witten  
Fort Worth, Texas

As I have stated before, anyone who loves a precision mechanical trade could not find any better School or course of instruction.

Gerald C. Ollis  
Inglewood, California

I own a real old (press camera) and I'm going to replace the focal plane shutter curtain which is full of holes. I have already disassembled the shutter completely and with the aid of Lesson 16 had no difficulty in this way.

Chris Bosch  
New Orleans, La.

With a background on all types of equipment, I feel I am a better photographer; can offer a better photographic service as well as a worthwhile camera repair service.

Walter J. Husband  
Hesperia, Michigan

## NCRS Lesson Binders



Now you can keep all of your texts neatly in order. Each text is held securely and the binder may be opened to any page in any text, yet each is instantly removable! Seven inches wide, your binder holds forty texts ready for immediate reference. This is a fine way to preserve your Camera Craftsman-ship lesson books.

Price only \$7.75

## A ServiShops PRODUCT



This colorful sign will tell your customers that you want their camera repair work. The sign is done in eye-catching yellow, blue and black on white background. The size is 11" by 14". A sign for every purpose. Standard heavy board, standard heavy board with easel, and paper that can be taped to any window.

Price each in quantity	1-4	5-9	10 up
Paper	.90	.70	.50
Board	1.00	.80	.55
Board with easel	1.10	.90	.65

May be ordered for quantity price. One sign is FREE, 25¢ in cash or stamps for handling and postage. No handling charge for your free sign if you order more than one.

*Nat Line:*  
**Flexi-Clamp**

**WRENCHES**



**T 751-12P \$3.50 ea.**

THESE WRENCHES are very effective tools for removing Lens and Retaining Rings that do not have built in Spanner Slots. You will not mar fine finishes or damage delicate lens mounts when you have a set of these wrenches in your kit. Available for any size diameter job. SIZES IN STOCK to fit:

EASTMAN KODAK LENS CELLS  
POLAROID LENS CELLS

LEICA View and Rangefinder caps  
OTHER sizes available on request  
PLEASE state size or purpose required when ordering.

Popular sizes: 7/16, 1/2, 21/32,  
3/4, 1-1/8, 1-1/4, 1-1/2, 1-3/4

**A ServiShops PRODUCT**

National Camera Repair School  
Englewood, Colo., U.S.A.

(New NCRS Graduates, Cont.)

Roy Hannan	Pennsylvania
Ernest Sokol	Pennsylvania
Neale A. Winner	Pennsylvania
Earl F. Donaldson	Texas
Douglas F. Jackson	Utah
Lawrence Fisher	Virginia
Woodrow E. Vest	Virginia
Wilfred Freme	West Virginia
Harry G. Tubbin	Wisconsin
Robert C. Holden	Wyoming

Highest Honors have been awarded by the School to three men in the graduating group. They are: Chester M. Bruszewski, California; E. Burton Shoffner, California; and E. H. Hylander, Malaga, Spain. Congratulations to all of you!

Although most NCRS people have been placed before graduation, employers may learn about trained people in their vicinity by request to the Placement Service, National Camera Repair School, Box 174CC9, Englewood, Colorado.

**OSCILLATING PHOTOCELL FORMS  
AUTOMATIC FOCUSING SYSTEM**

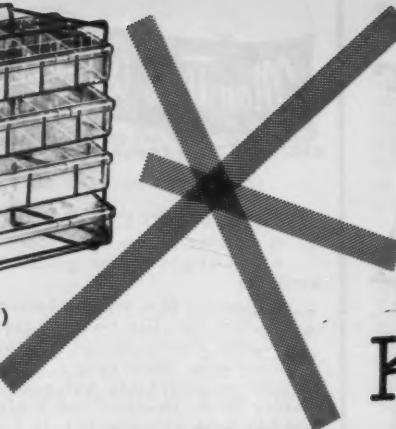
A new system for automatic electronic focusing has been demonstrated in laboratory models by Compaco, Inc. The system known as "OAR", makes use of a continuously and rapidly oscillating photo-electric cell to measure light intensities along the optical axis of a lens. When the midpoint of the sensor's back-and-forth motion coincides with the focal plane of the lens, sensor emits an electric signal whose frequency is twice its rate of mechanical oscillation. Any shifting of the focal plane away from that midpoint decreases the signal frequency and shows a phase shift which indicates direction. Conversion of the signal into commands to a servo system shifts the lens to restore the sharpest focus.

According to the company, the system will find useful application in: automatic focusing machines such as cameras and microscopes; proximity warning devices; inspection and process control units; high temperature measuring equipment; and determination devices for focal length and color characteristics of lens systems.

If you had started business with a billion dollars in the year One, and had operated so poorly as to lose \$1,000 every day, you'd still have enough left today to carry you at the same rate of loss for about 780 more years.



(a \$3.95 value)



Kits  
Kits  
Kits

You've asked for them and here they are!



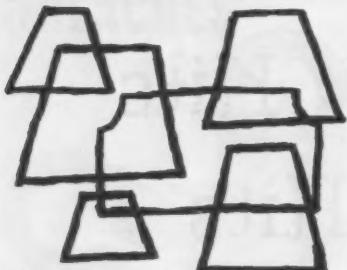
## KITS NOW AVAILABLE:

\* When TransRak is not ordered, these kits include a P 201 Plastic tray for storing.

*RIVET ASSORTMENT	\$7.50
*WIND ASSEMBLY ASSORTMENTS	
For Box Camera	\$6.95
For Popular Priced Folding Camera	\$6.95
*SYNCH INSTALLATION KITS	
External (Connectors, Insulators, etc.)	\$9.75
Internal (Replacement Parts, contact material, etc.)	\$15.50
*SHUTTER BLADE ASSORTMENT	\$6.95
FLASHCORD ASSORTMENT (6 cords)	\$9.90
SPRING WIRE KIT	
3' each of sizes .011, .012, .018, .020, .022	
6" each of sizes .040 and .050	\$1.00
METRIC SCREW ASSORTMENT (400 pieces)	\$7.50
MIRROR ASSORTMENT (6)	\$5.95

**1/4 PRICE! YOUR TRANS-RAK, SHOWN ABOVE,  
COSTS YOU ONLY \$1.00 WITH ANY ServiShops  
KIT ORDER TOTALING \$20.00 OR MORE.**

**NEW  
mirror  
ASSORTMENT**



CONTAINS 6 OF THE  
MOST FREQUENTLY USED MIRRORS  
FOR ROLLEI, GRAFLEX,  
AND EXAKTA CAMERAS



**SPECIAL SUBSCRIPTION  
RATES FOR STUDENTS**

"Photographic Trade News"

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\$3.00 each for only \$2.25\*

**ORDER THEM NOW!**

Also available at student rates\*  
"Modern Photography"  
"Popular Photography"  
"U. S. Camera"

\* U. S. and Possessions only



**IT'S NOT TOO LATE --- BUT ALMOST!**

A quarter of a million footprints!  
6,000 bright red or golden yellow vests and  
weskits!

A quarter of a million balloons!  
20,000 Day-Glo Bumper Strips!  
90,000 Plastic strips for show cases!

This tells about only a portion of the merchandising materials and specialities that the Master Photo Dealers' and Finishers' Association has been shipping to help dealers and photo finishers throughout the United States and Canada tie-in with the big industry-wide promotion "May Time Is Picture Time".

HAVE YOU MADE PLANS to participate in this promotion? You still have a little time in which to plan your advertising and projects to help add to the success of this campaign.

Even though you started thinking and planning in January or February, there is always a lot of follow-up and last minute details that must be worked out. May might seem to be still a long way off, but you don't want to be caught with your plans half completed, or not even started, when you tear April off your calendar and there's the First of May, staring you in the face.

Get together with the dealers you service, be sure that checkups and repair are mentioned in every ad from now through May and June. Be sure there is a ServiShops sign in his window and another one at the film counter. Offer free checkups if you can. Get those cameras that don't work into your shop now so you can continue to give good service throughout the summer. There is sure to be more work than all the shops can handle by mid-season, and the time those cameras are on the shelves waiting to be repaired is a total loss; to the owners because they can't record their summer fun, and a loss to the whole photo industry because its products aren't being used.

Whatever you do to help promote "May Time Is Picture Time", be sure you let the Camera Craftsman Editor know of your projects, so they can be publicized and shared by all next year. Camera repair can be a powerful help to dealers. Let's show 'em how it's done!



## BELLOW'S

Have we heard from  
you lately?

Dear Mr. Love:

I am writing this letter to let you know how I feel about the National Camera Repair School in this early part of my studies. I imagine that everyone feels somewhat as I did, that is, "unless you are receiving resident training, one is not getting the best".

I have changed my mind after seeing my first two test papers after they have been graded. My instructor, Bud Fowler, really surprised me. In the test on the Camera and Its Variations I was asked to make a list of different cameras and to catalogue them by type, etc. This should make very dull uninteresting reading and I really didn't expect the list to be more than glanced at to make sure it was there. That is where my surprise came, on two different cameras I had listed them as having 20 mil synch, but Bud noticed this and called my attention to the fact that they are in reality only synched on "M" at certain speeds, and then added as a note that 20 mil synch would have meant full "M" synch at all speeds.

On a lesson as simple as this one if an instructor takes the time to find little mistakes and correct them, it certainly makes the student feel more confident that later on when more difficult lessons are being studied that he will be receiving the careful supervision that is required to be a competent craftsman.

You and your staff are to be congratulated on the careful attention to detail that I seem to be getting in my tests.

Just wanted to pop off and let you know how I felt, thanks for now.

John E. Witten  
Fort Worth, Texas

I should like to thank Cora Adams for her interest in my work. I received both of her cards.

I noticed the article and picture from one of my lessons in the Camera Craftsman. Thank (Cont. Page 19)

### RECENT CONSIGNMENTS ACCEPTED ON SERVISHOPS ANALYZERS

There are never any trade-ins accepted on purchases of ServiShops Motion Analyzers. However, it has been NCRS Supply policy to take instruments on consignment. That's good news for those of you who would like to make an especially good "buy" on a used test instrument.

Is there some particular machine in which you are interested? Place a request. When an instrument of the type you want comes in, you'll be told. You can even name the price you'd like to pay, if you wish. The plan makes available shutter testers, synchronization testers, contact testers and others by such manufacturers as Aerotronic, Heiland, Hickok, and NCRS.

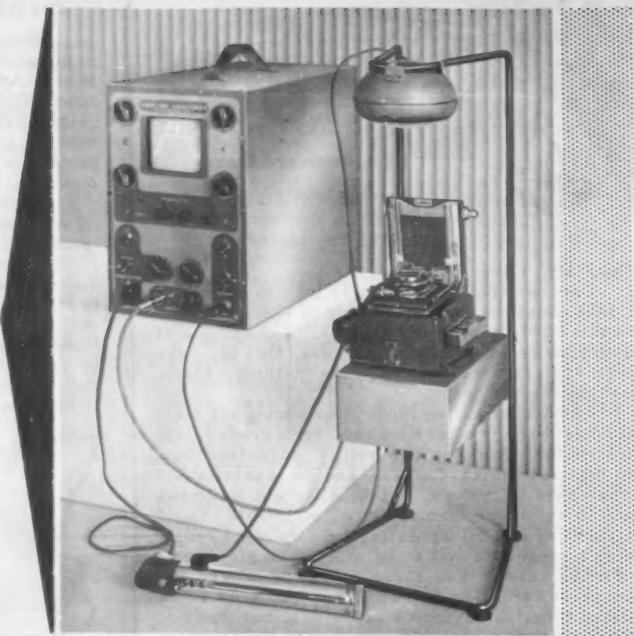


Here are the approximate prices you may expect to pay for different makes and models of used test equipment:

Gardner Synchrotimer	\$195 to 275
Heiland SynchroTester	80 " 120
Aerotronic (Synch)	60 " 85
Aerotronic (Shutter)	50 " 75
Rush	50 " 75
Hickok	50 " 75

This also gives you some idea of the amount you will be paid for an instrument you now own, when buying a ServiShops Motion Analyzer.

- PRICED TO FIT  
YOUR POCKETBOOK
- DESIGNED BY  
EXPERTS
- PLANNED FOR YOU
- BUILT TO GIVE YOU  
SERVICE
- TESTED IN SHOPS  
LIKE YOURS



## YOU CAN TEST PHOTO EQUIPMENT IN A MATTER OF SECONDS

**BOOST YOUR EARNINGS IN LESS TIME**

Because your Analyzer requires fewer adjustments to make a test, you'll save time and steps on every test you make. You'll actually need up to 50% less time than you'd use on even a single, high cost special purpose instrument. You can go from test to test with no complications - and without worry about calibration or accuracy! Savings of time and an increase in accuracy guarantee you higher earnings. The most expensive thing you own is your own time! Make a shutter or synch adjustment with half the testing time and you double your earning power! Your ServiShops Analyzer means more money for you!

SEND  
FOR  
**FREE**  
**BOOKLET**  
NOW

**NATIONAL CAMERA REPAIR SCHOOL**

**Bellows (cont.)**

you. I also noticed something else in the same issue that I believe ought to interest every photographer. In the "Our Students Speak" column the article by John Harvey explains the help that the camera repair lessons have been in his photo work. All of this has been true in my own case, plus something else. When I decided that I wanted a 35 mm camera intending to enter some color slide competition, I knew that I would need a top quality camera. With the great multitude of 35 mm cameras on the market, selection could be difficult. However, prepared with knowledge gained from my camera repair lessons, I was able to examine the various cameras, and know quality when I saw it. For proof of this one of my color slides has won an award in competition in the "Gulf States Camera Council."

Edward H. Oetjens  
Houston, Texas

This course has made for a better understanding in inspection where I work as I am the Chief Inspector for \_\_\_\_\_, the Manufacturer of the \_\_\_\_\_ Projector.

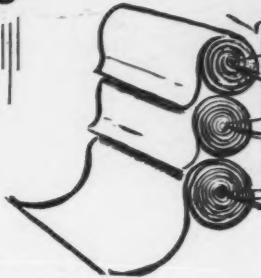
The part on optics was of especial interest although the part on shutters was a great help too in designing shutters for the projectors.

Miles Helm  
Livonia, Michigan

This training should prepare one to meet the most discriminating customer with complete confidence in himself and his ability to satisfy his customer's need.

Paul Briscoe  
Ponca City, Oklahoma

## BELLows MATERIAL



"Outer" 36" wide	\$2.20 yard
"Inner" 36" wide	\$2.00 yard
Discount: 1 to 4 yards - 20%	
5 to 10 yards - 25%	

**FOCAL PLANE SHUTTER MATERIAL**  
42" wide \$6.00 yard  
Discount: 1 yard - 20%  
2 to 4 yards - 30%; 5 to 10 yards - 40%  
Minimum Order: 1 yard  
Over 10 yards, write for special discount

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National Camera Repair School  
Englewood, Colo., U.S.A.

request for  
information...

### NATIONAL CAMERA REPAIR SCHOOL

Box 174  
Englewood, Colorado

I am interested in the opportunities and advantages of a career in Camera Craftsmanship. Please furnish me with complete information about your training program.

Name \_\_\_\_\_ Age \_\_\_\_\_

Street \_\_\_\_\_

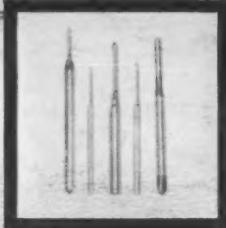
City \_\_\_\_\_ State \_\_\_\_\_



If you have a friend or relative who may be interested in the money making opportunities that exist today in the camera repair field, have him or her fill out this coupon and mail it to the National Camera Repair School, Box 174, Englewood, Colorado.



**SPEED UP REPAIR TIME**  
WITH  
a supply of **FINE METRIC SCREWS and taps**



TAP SIZES:  
1.0mm, 1.2mm, 1.4mm, 1.7mm  
\$1.80 ea.

This assortment comprises a selection of lengths, head types and metals calculated for a variety of applications. Only the finest quality screws with cut threads and turned heads are supplied. Appearance, finish and fit are superior to those associated with ordinary rolled thread, struck-up head products.

Short, medium and long lengths are supplied in countersunk and flush head types in both brass and steel. The assortment is packaged in a clear plastic box. Small quantities of nuts and washers are included.

Mixture is varied as to:

LENGTH: (Various in a range from 3/32" to 5/16")

HEAD TYPE: (Flat, Round, Oval and Fillister)

METAL: (Brass and Steel)

SIZES: (Metric Assortment, 400 pieces)

1.0mm, 1.2mm, 1.4mm, 1.7mm

\$7.50 Box

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National Camera Repair School  
Englewood, Colo., U.S.A.

**THE CAMERA  
CRAFTSMAN firm**

NATIONAL CAMERA REPAIR SCHOOL

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